



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,671	06/27/2003	Michael J. Pugia	017191.0033 (MSA-3452)	5201
7590 Bayer Healthcare LLC 511 Benedict Avenue Tarrytown, NY 10591		04/12/2007	EXAMINER SINES, BRIAN J	
			ART UNIT 1743	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE 3 MONTHS		MAIL DATE 04/12/2007	DELIVERY MODE PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/608,671

Applicant(s)

PUGIA ET AL.

Examiner

Brian J. Sines

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/2/2007 (request for RCE).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4 and 6-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4 and 6-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 1/16/2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Drawings

The drawings were received on 1/16/2007. These drawings are acceptable.

Response to Arguments

Applicant's arguments with respect to the amended claims filed 1/16/2007 have been considered but are moot in view of the new ground(s) of rejection.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 1, 4, 6 and 8 are provisionally rejected on the ground of nonstatutory double patenting over claims 1, 4 – 6 and 8 of copending Application No. 10/608,400. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application

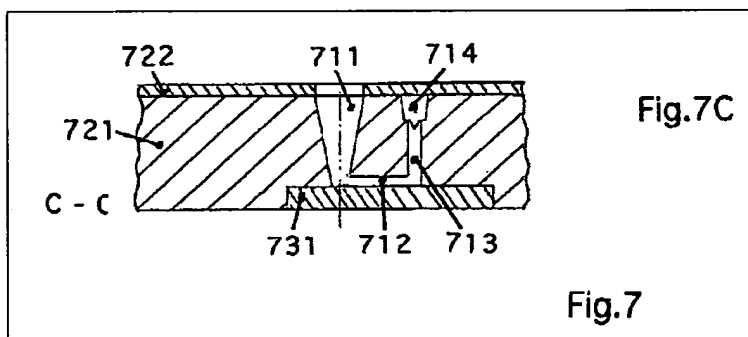
Art Unit: 1743

since the referenced copending application and the instant application are claiming common subject matter.

2. Claim 7 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/608,400 in view of Wyzgol et al. (U.S. Pat. No. 6,776,965 B2) (hereinafter "Wyzgol"). This is a provisional obviousness-type double patenting rejection.

Regarding claim 7, claim 1 of the copending application does not recite that the sample entry inlet port is tapered to engage the corresponding shape of a pipette for depositing a sample to be analyzed.

Wyzgol teaches a similar analytical microfluidic device comprising a tapered, funnel-shaped inlet port 711 designed for taking up the tip of a pipette for facilitating sample introduction into the device (see, e.g., col. 8, lines 30 – 37; figure 7 (7C)).



Hence, as shown by Wyzgol, a person of ordinary skill in the art would accordingly have had a reasonable expectation for success in incorporating the use of a tapered inlet port with an analytical microfluidic device for facilitating sample fluid introduction into the device for processing and analysis (see MPEP § 2143.02). Therefore, it would have been obvious to a

Art Unit: 1743

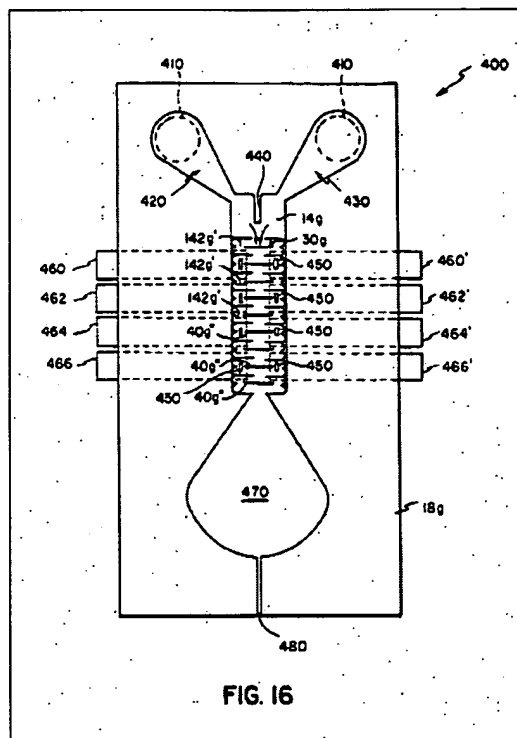
person of ordinary skill in the art to incorporate a tapered inlet port as claimed with the disclosed microfluidic device.

3. Claims 9 and 10 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No.

10/608,400 in view of Columbus (U.S. Pat. No. 4,618,476) (hereinafter "Columbus '476"). This is a provisional obviousness-type double patenting rejection.

Regarding claim 9, claim 1 of the copending application does not recite the incorporation of an overflow chamber.

Columbus '476 teaches the incorporation of an overflow chamber 470 within a microfluidic device to facilitate effective sample fluid introduction and subsequent processing (see figure 16). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate an overflow chamber within the disclosed microfluidic device to facilitate effective sample fluid introduction and subsequent processing.



Regarding claim 10, the recitation that the overflow chamber contains an indicator to detect the presence of excess sample is considered a statement of intended use, which does not further delineate the structure of the claimed apparatus from that of the prior art. Since these claims are drawn to an apparatus statutory class of invention, it is the structural limitations of the apparatus, as recited in the claims, which are considered in determining the patentability of the apparatus itself. Process or intended use limitations are accorded no patentable weight to an apparatus. Process limitations do not add patentability to a structure, which is not distinguished from the prior art. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Claim Rejections - 35 USC § 103

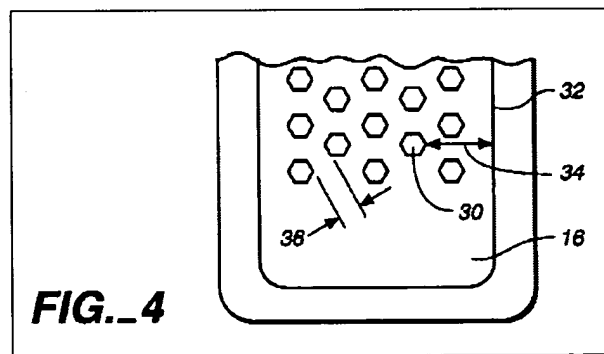
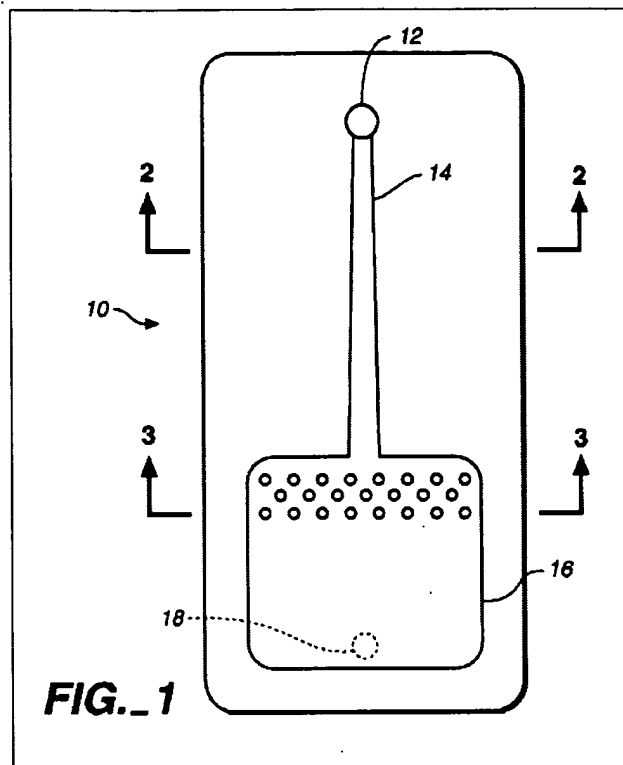
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

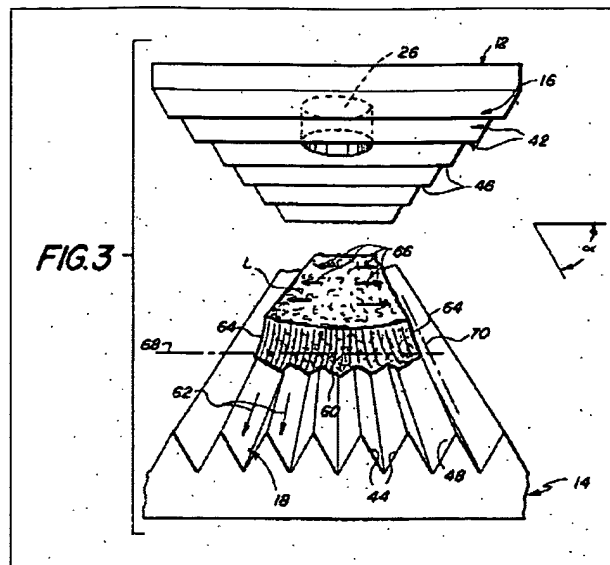
1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 1 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beuchler (U.S. Pat. No. 6,113,855 A) in view of Columbus (U.S. Pat. No. 4,233,029).

Regarding claim 1, Buechler teaches a microfluidic device comprising: an inlet port 12; an enclosed capillary passageway 14 in fluid communication with the inlet port 12; an enclosed inlet chamber (e.g., distal region 16) comprising an array of post structures (i.e., capillarity-inducing structures 30); and a vent structure (i.e., escape port 18) (see col. 5, line 21 – col. 7, line 43; figures 1 & 4). As shown in figure 1, the enclosed inlet chamber 16 is in fluid communication at one side or end side thereof with the enclosed capillary passageway 14. In addition, as shown in figure 1, the vent passageway 18 is positioned at a top side of the enclosed inlet chamber opposite the entry of the capillary passageway 14 into the enclosed inlet chamber 16.



Beuchler does not specifically teach the incorporation of at least one groove structure extending across the inlet chamber.

Columbus teaches the use of groove structures (e.g., 42 & 44) for facilitating uniform fluid flow within microfluidic devices (see, e.g., col. 5, lines 1 – 55; figure 3). Columbus shows an entry aperture 26 leading to chamber structure underneath defined by surfaces 16 and 18, wherein grooves 42 and 44 extend across the top surfaces of this chamber (see figure 3).



Hence, as shown by Columbus, a person of ordinary skill in the art would accordingly have had a reasonable expectation for success in incorporating the use of a groove structure with an analytical microfluidic device for facilitating uniform sample fluid introduction into the device for processing and analysis (see MPEP § 2143.02). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate a groove structure in the chamber as claimed with the disclosed microfluidic device.

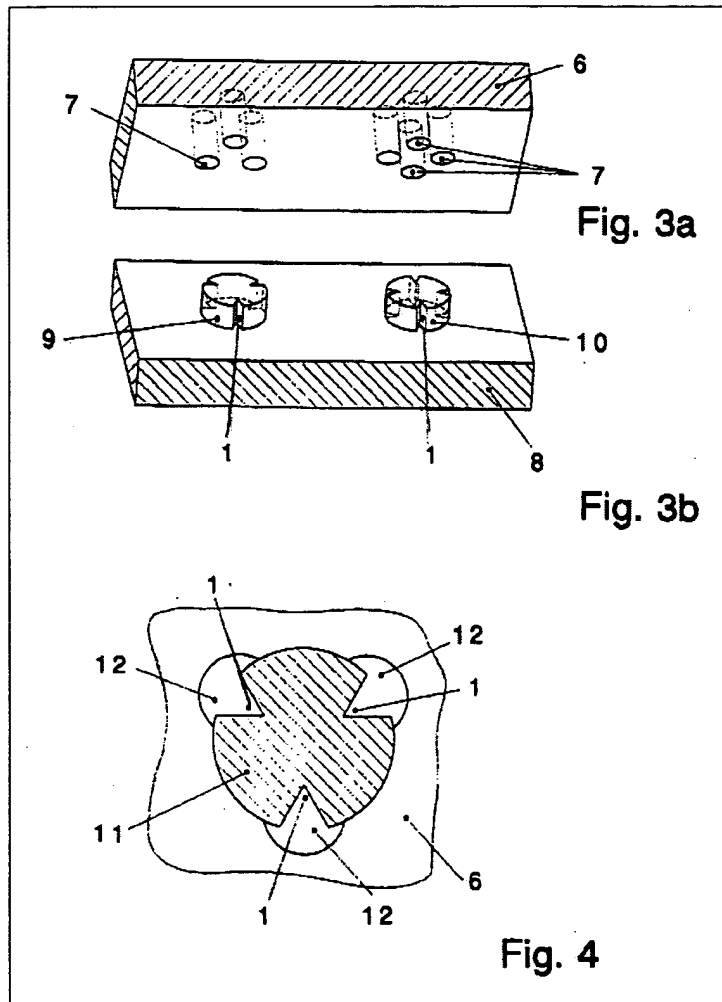
Regarding claim 8, Buechler anticipates that the inlet chamber 16 containing the assay volume comprises a reagent (e.g., surface bound reactants comprising solid phase bound antibodies which react with sample antigen) (see, e.g., col. 4, lines 42 – 67; col. 5, line 54 – col. 6, line 5).

2. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beuchler and Columbus, and further in view of Peters (U.S. Pat. No. 6,296,126 B1).

Regarding claims 4 and 6, Buechler and Columbus are silent to the specific teaching of incorporating wedge-shaped cut-out structures with either a groove or weir structure within the

Art Unit: 1743

disclosed microfluidic device. As shown in figure 3b, Peters does teach the incorporation of wedge-shaped cut-out structures (post or columnar projection 9 having wedge-shaped cut-outs 1) within a microfluidic apparatus for facilitating effective fluid control within a microfluidic device (see col. 1, line 10 – col. 6, line 67; figures 1a, 3b & 4).



As evidenced by Peters, a person of ordinary skill in the art would have recognized the suitability of incorporating the use of wedge-shaped cut-out structures within a microfluidic apparatus for the intended purpose of facilitating effective fluid control (see MPEP § 2144.07). Consequently, a person of ordinary skill in the art would accordingly have had a reasonable

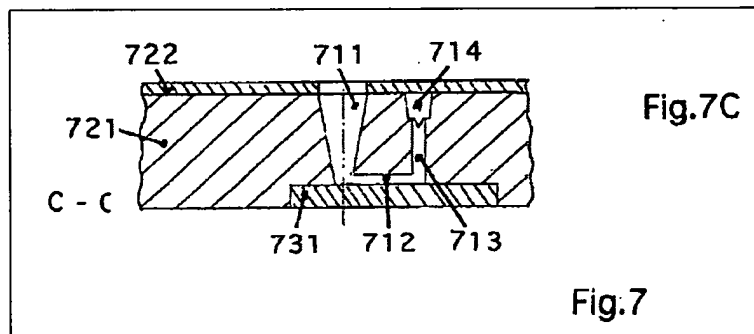
Art Unit: 1743

expectation of success of incorporating the use of these wedge-shaped cut-out structures within a microfluidic apparatus for facilitating effective fluid control (see MPEP § 2143.02). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate the use of wedge-shaped cut-out structures as claimed with the disclosed microfluidic device in order to provide an effective for effective sample fluid control within the microfluidic apparatus.

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beuchler and Columbus, and further in view of Wyzgol et al. (U.S. Pat. No. 6,776,965 B2) (hereinafter “Wyzgol”).

Regarding claim 7, Buechler and Columbus do not specifically teach that the inlet port is tapered to engage the corresponding shape of a pipette for depositing a sample to be analyzed.

Wyzgol teaches a similar analytical microfluidic device comprising a tapered, funnel-shaped inlet port 711 designed for taking up the tip of a pipette for facilitating sample introduction into the device (see, e.g., col. 8, lines 30 – 37; figure 7 (7C)).



Hence, as shown by Wyzgol, a person of ordinary skill in the art would accordingly have had a reasonable expectation for success in incorporating the use of a tapered inlet port with an analytical microfluidic device for facilitating sample fluid introduction into the device for processing and analysis (see MPEP § 2143.02). Therefore, it would have been obvious to a

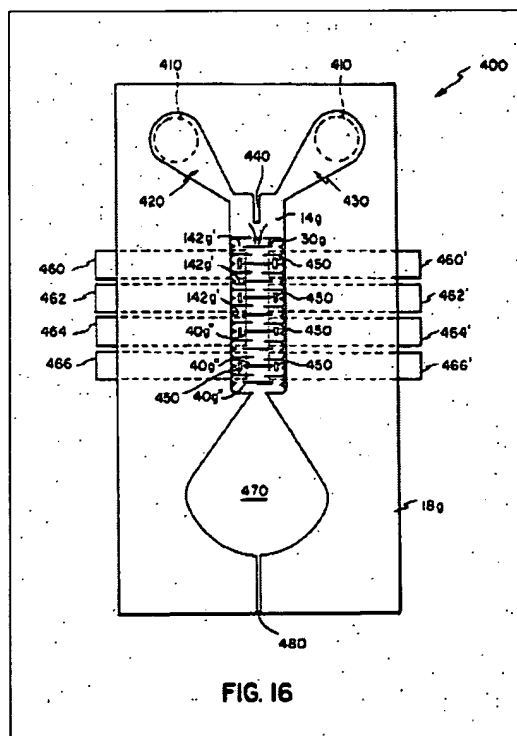
Art Unit: 1743

person of ordinary skill in the art to incorporate a tapered inlet port as claimed with the disclosed microfluidic device.

4. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beuchler in view of Columbus (U.S. Pat. No. 4,618,476) (hereinafter "Columbus '476").

Regarding claim 9, Beuchler and Columbus do not specifically teach the incorporation of an overflow chamber.

Columbus '476 teaches the incorporation of an overflow chamber 470 within a microfluidic device to facilitate effective sample fluid introduction and subsequent processing (see figure 16). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate an overflow chamber within the disclosed microfluidic device to facilitate effective sample fluid introduction and subsequent processing.



Art Unit: 1743

Regarding claim 10, the recitation that the overflow chamber contains an indicator to detect the presence of excess sample is considered a statement of intended use, which does not further delineate the structure of the claimed apparatus from that of the prior art. Since these claims are drawn to an apparatus statutory class of invention, it is the structural limitations of the apparatus, as recited in the claims, which are considered in determining the patentability of the apparatus itself. Process or intended use limitations are accorded no patentable weight to an apparatus. Process limitations do not add patentability to a structure, which is not distinguished from the prior art. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional cited prior art teach various pertinent microfluidic devices.

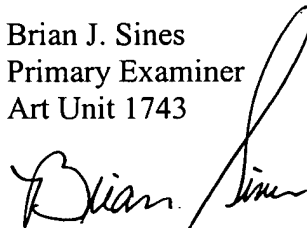
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Sines whose telephone number is (571) 272-1263. The examiner can normally be reached on Monday - Friday (11 AM - 8 PM EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1743

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Brian J. Sines
Primary Examiner
Art Unit 1743

A handwritten signature in black ink, appearing to read "Brian Sines", is written over the printed name and title.